Department of Homeland Security
Science & Technology Directorate
Border and Transportation Security Portfolio

Ms. Jeanne Lin

Director, BTS Portfolio

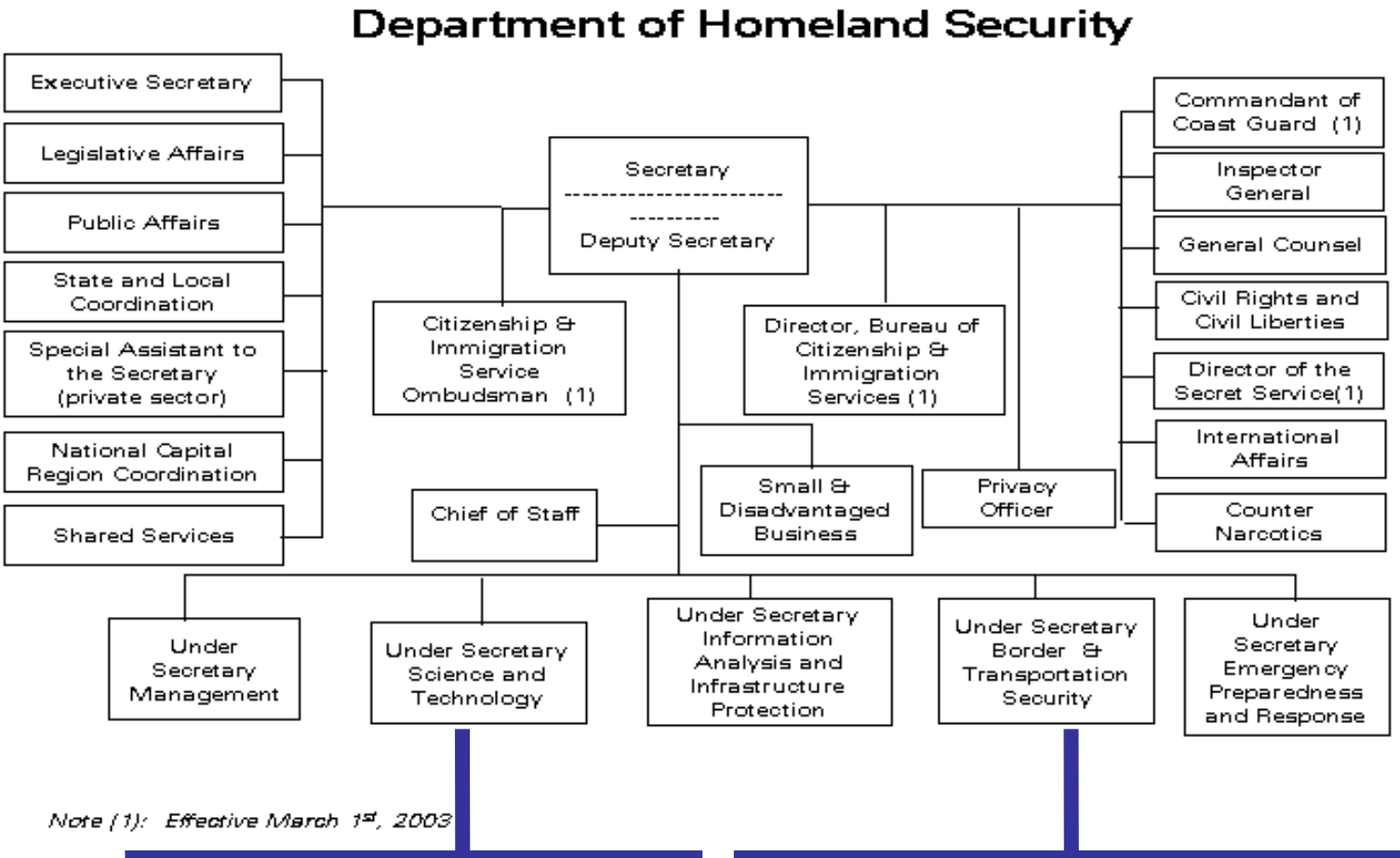
April 20, 2005

Homeland Security

Agenda

- S&T Organizational Background
- Border and Transportation Security (BTS) Mission and Objectives
- BTS Portfolio Strategic Technology Planning
- BTS Portfolio Program examples
- Observations of a DHS “Plank Owner”

Homeland Security



Science and Technology

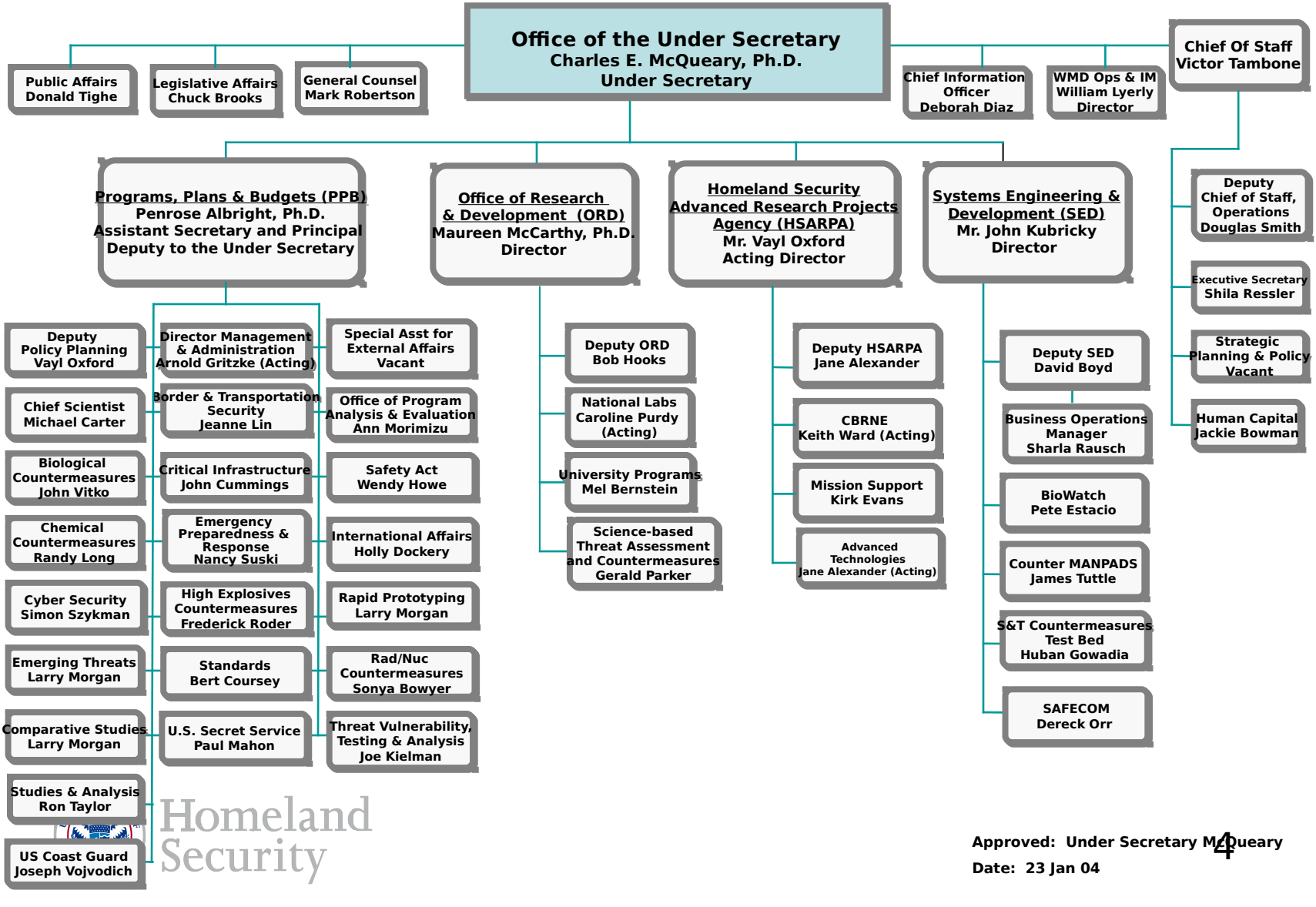
Border & Transportation Security

- U.S. Customs and Border Protection
- U.S. Immigration and Customs Enforcement
- Transportation Security Administration
- Federal Law Enforcement Training Center

Homeland Security

Department of Homeland Security
Science and Technology Directorate

Revised: 23 January 2004



Homeland Security

Approved: Under Secretary McQueary

Date: 23 Jan 04

BTS Integrated Product Team Mission

Mission Statement

Develop and Transition Capabilities that Improve the Security of our Nation's Borders and Transportation Systems without Impeding the Flow of Commerce and Travelers

Homeland Security

BTS Objectives

Strategic Objectives

- Prevent entry of terrorists, criminals and illegal aliens
- Interdict terrorist instruments and contraband at the earliest opportunity
- Improve the security of U.S. transportation systems
- Facilitate flow of commerce and travelers – identify, disrupt & dismantle entities that threaten the United States

BTS Challenges

Addressing Risk

The new security environment requires us to secure our border and transportation infrastructure, not just stem the tide of illegal activities. That is a far more difficult goal and there will never be enough officers to cover the vast areas that must be secured.

Threat Examples

Terrorists
Instruments of Terror
Explosives
Smugglers
Vehicles/Vessels as Vectors

Vulnerability Examples

Unmonitored open border regions
Unmonitored inter-modal shipping containers
Interruption of Commerce Flow
Transportation Security
…*size and scope of problem*

Homeland Security

BTS Challenges (cont'd)

Addressing Risk

We must find ways to more effectively detect and react to threats to our border and transportation systems officers while facilitating the flow of people and goods

The S&T/BTS technology investments are aimed at that goal

Homeland Security

BTS Portfolio Strategy

BTS Portfolio must be a Systems Integrator

- Conduit for Technology Portfolios
- Conduct Studies and Analysis where needed
- Utilize capabilities where existing or planned
- Insert Technology into existing BTS programs (i.e. container security)
- Create new capability if called for (e.g. FAMs)
- Work with Customers in a collaborative and cooperative environment
- Involve Industry, Government, Academia
- Develop a Systems model for overall view

BTS Inputs and Sources

Addressing Capability Gaps and Prioritization

- Public Law, Policy Guidance

- BTS Portfolio Strategic Technology Planning Process
  - Bottom-up (operator) input; Top-down (management) validation
  - Technology Workshops (capability gaps only)
  - Gaming scenarios

BTS Inputs and Sources (cont'd)

Addressing Capability Gaps and Prioritization

- Customer input and collaboration
  - Examples: Container Security, Federal Air Marshals, America's Shield Initiative, Arizona Border Control Initiative

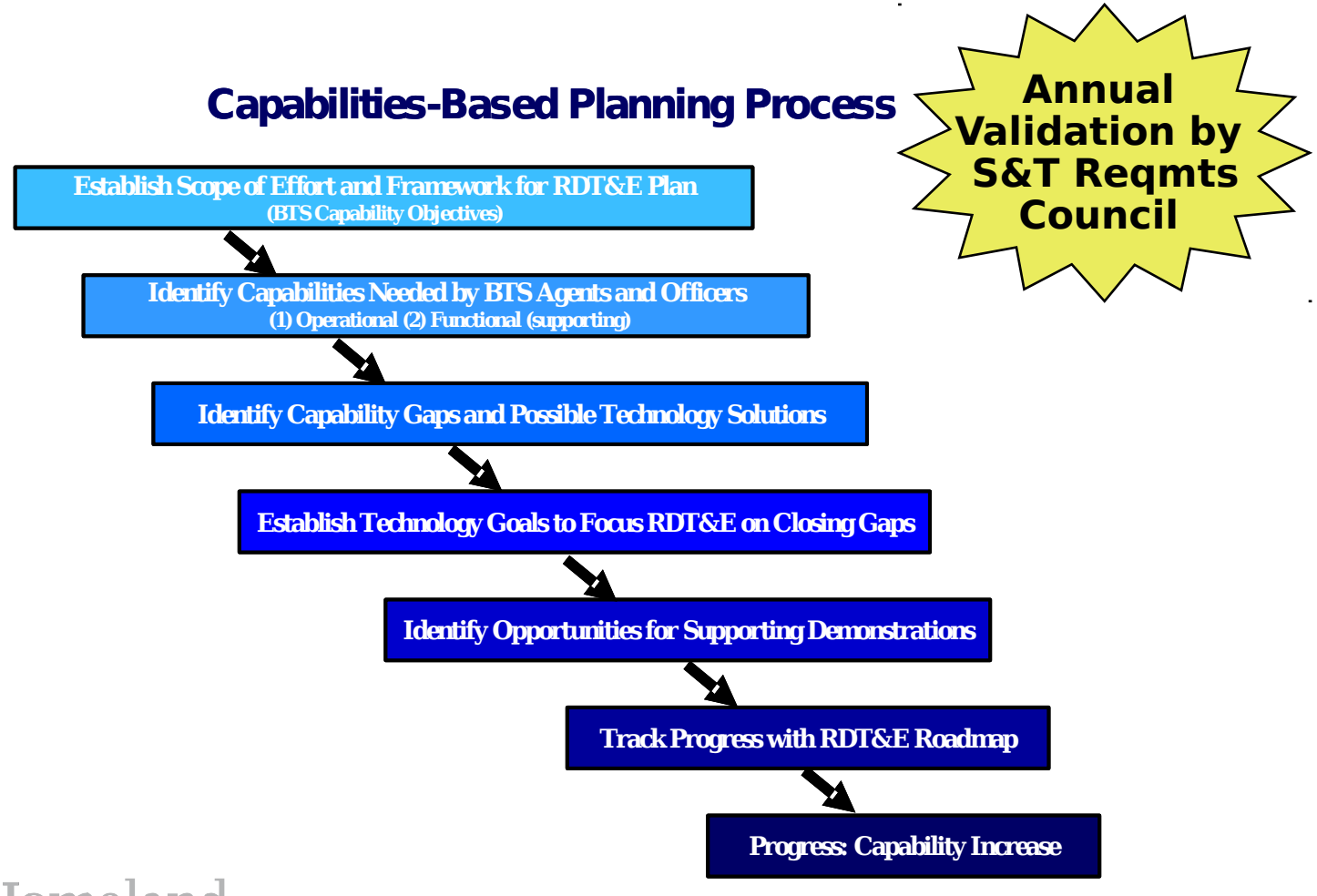
- S&T Requirements Council; BTS Directorate Input; Risk Assessments

BTS/S&T Technology Priorities

How do we know S&T is working on highest priority BTS technology needs?

- **We are told it's a high priority**
- **We implement a capabilities-based technology planning process**
  - **A methodical process that involves Users, Technologists and Senior Management**

Capabilities-Based Approach


Capabilities-Based Planning Process
Annual Validation by S&T Reqmts Council
Establish Scope of Effort and Framework for RDT&E Plan
(BTS Capability Objectives)
Identify Capabilities Needed by BTS Agents and Officers
(1) Operational (2) Functional (supporting)
Identify Capability Gaps and Possible Technology Solutions
Establish Technology Goals to Focus RDT&E on Closing Gaps
Identify Opportunities for Supporting Demonstrations
Track Progress with RDT&E Roadmap
Progress: Capability Increase

Homeland Security

Border and Transportation Security

Operator Point-of-View

What Capabilities do We want?

And in what Type of Operating Conditions?

What Kind of Technology can be applied to address the Capabilities?

How do we use the Technology and how does it mesh into the Field?

What Areas does S&T Invest In?

What is the DHS BTS Technology Vision?

Homeland Security

BTS Capability Objectives

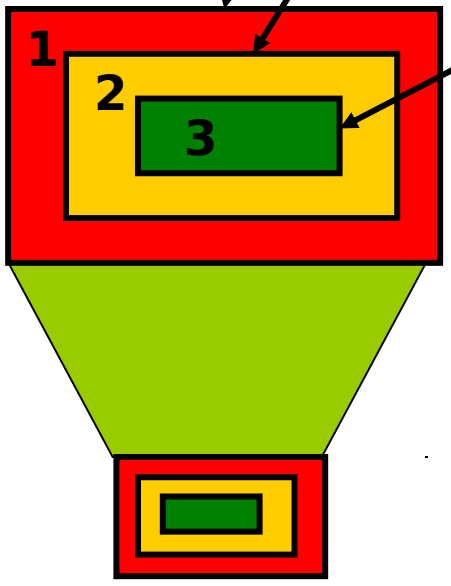
- **Surveillance and Monitoring**
- **Communications and Information Management**
- **Targeting and Intelligence**
- **Officer Safety**
- **Apprehension/ Detention/ Seizure/ Removal**
- **Identification and Assessment**
- **Training and Proficiency**
- **Deterrence**

"Color-coding" the Capability Objectives

1. Do BTS operators have the functional capability to provide this operational capability?
YES / MARGINAL / NO

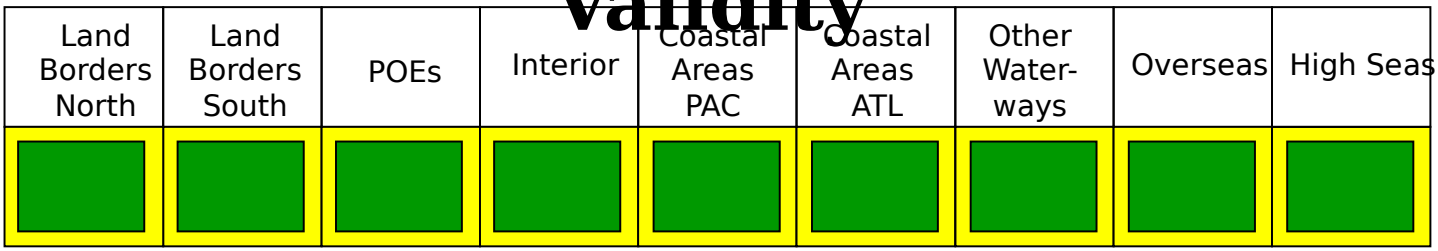
2. Are technologies available in the near term to provide this functional capability?
YES / MARGINAL / NO

3. What are the technology risks of developing this functional capability?
LOW / MEDIUM / HIGH



Homeland Security

I&A2. Document Verification & Validity



Definition: The capability to examine, assess and determine document authenticity through existing and future data and physical systems.

Existing Programs

- Hand-held confirmed laminate viewers
- Diffraction grids for scrambled indicia
- Photo phones
- Secret Service anti-counterfeiting
- Embedded security strips

Technology Limitations and Barriers

BTS Portfolio

Developing Programs

- BTS Strategic Technology Planning Process
  - Operator Workshops
  - Scenario-based Seminar Gaming
  - Operator Integrated Product Teams
- Intelligence Community input
  - Scenario-based assessments
- BTS Directorate

Portfolio Program Examples

Border and Transportation Security

- Border Watch
  - Border Detection Grid
- Container Security Program

Border Detection Grid

Detect Persons and Contraband at Borders and POE

❖Current Capability
- Some radar, seismic and video camera capabilities
- Prototype fiber optic fence systems
- America's Shield Initiative
- UAV programs

❖Interim Capabilities
- Develop and prototype next generation of fixed sensors for southern borders
- Integrate in a tech prototype in Southwest Border
- First level sensor fusion capabilities
- First level auto alert and scene understanding
- Initial air mobile sensors prototypes

❖Desired Capability End-State
- Border with depth across US with high probability of detection (Pd) and low probability of false alarm (Pfa), accurate track and low latency
- Automated alerting functions
- Northern border extensions (different sensors)
- Integration with NORTHCOM and AMOC
- Integrated UAV, ground, aircraft real-time sensor fusion system
  - Across CBP, USCG, & ICE
  - LINK-16 – like

❖Residual Risk
- Integration into ASI

❖Programs
- Border Detection Grid
- UAV Program
- Automated Scene Understanding

Container Security

Detect Persons and Contraband at Borders and PO

❖Current Capability

- All containers are assessed using National Targeting Center (NTC)
- Integrity depends on seals which can be circumvented
- Targeting depends on manifest data and rule based systems

❖Interim Capabilities

- A container security device that assures container integrity
- Reporting through a global tracking and communications system which gives the container travel and history
- Reliable container communications when the container is blocked from any line-of-sight link when stacked on a ship or in a terminal yard.

❖Desired Capability End-State

- Revamped end-to-end supply chain with operations with
  - Visibility before stuffing
  - Visibility at the sub-container level
  - Automated detection and targeting of contraband

❖Residual Risk

- Non-containerized cargoes (bulk)

❖Programs

- ACSD
- Marine Asset Tag Tracking System (MATTS)/Radio Frequency Identification (RFID) Integration
- Advanced Material Container
- Secure Carton

Observations

- Operational and Organizational challenges and Fiscal Constraints
- Sometimes the best solution is low tech or no tech
  - Not everyone is Mr. Wizard
- Info to the tactical level in a timely manner important to field personnel

Homeland Security

Observations (cont'd)

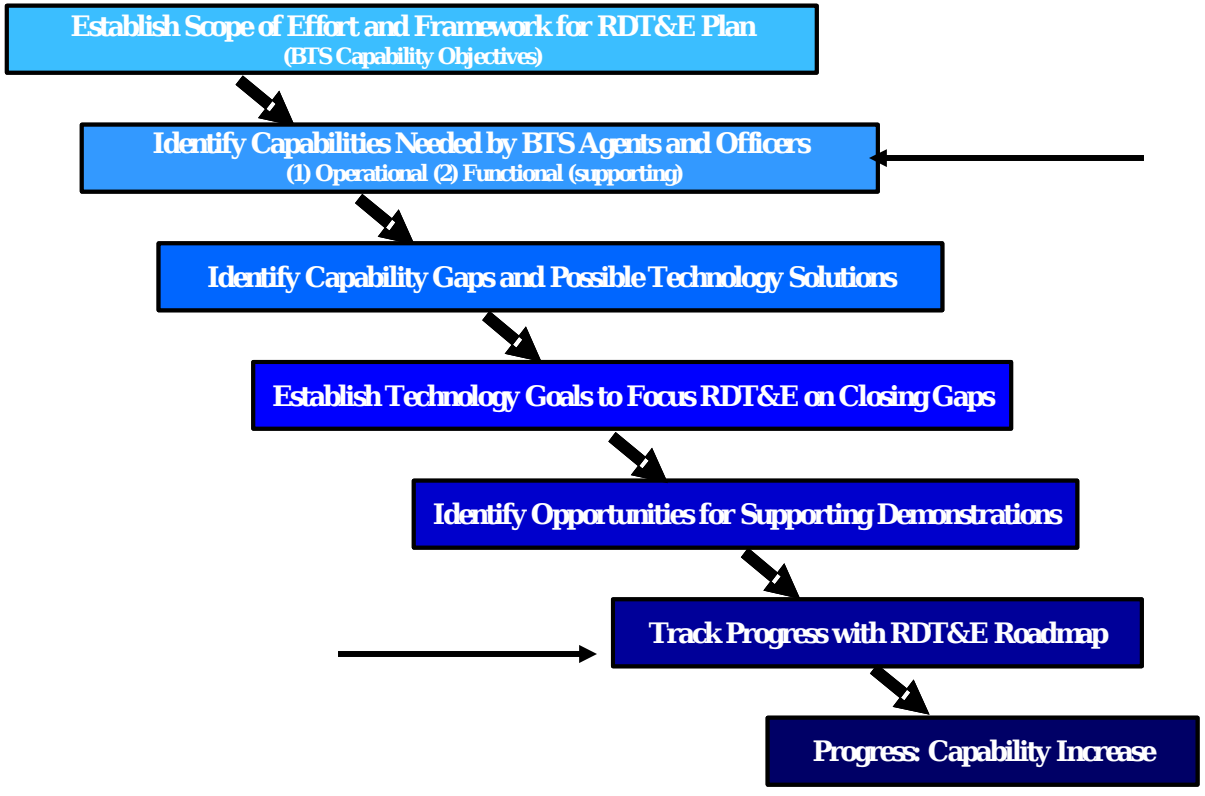
- Technology Transition and Lessons Learned (i.e. COP, Blue Force Tracking)
- Develop Architectures and Integrate Systems
- Broad-based systems view needed
  - How does technology insertion or process change impact operations, policy?
  - What are policy implications to technology or process?

Homeland Security

Capabilities-Based Tech Planning

Where We Are Today

Capabilities-Based Planning Process


Establish Scope of Effort and Framework for RDT&E Plan
(BTS Capability Objectives)
Identify Capabilities Needed by BTS Agents and Officers
(1) Operational (2) Functional (supporting)
Identify Capability Gaps and Possible Technology Solutions
Establish Technology Goals to Focus RDT&E on Closing Gaps
Identify Opportunities for Supporting Demonstrations
Track Progress with RDT&E Roadmap
Progress: Capability Increase

Capability-Based Planning works for S&T/Border and Transportation Security!

Homeland Security

CONTACT INFORMATION

Ms. Jeanne W. Lin
Director, BTS Portfolio

Department of Homeland Security
Science & Technology Directorate
Plans, Programs and Budget

jeanne.lin@dhs.gov

EA, Ms. Morgan (202) 254-5742

Homeland Security

Homeland Security